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SPECIFIC TRAINING FOR THE SHOTOKAN KARATE BASED ON THE COMPETITION FIGHT

TREINO ESPECÍFICO PARA O KARATÊ SHOTOKAN BASEADA NA LUTA DE COMPETIÇÃO

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Abstract

The objective of the study was to explain the specific training to the karateka improve the competition fight. The situational training the karate coach needs to prescribe the actions that occurs in the competition fight. The situational training with exercise of anticipation, two karatekas stay at the base fight, a karateka practices the attack with kick or punch and the other karateka does the anticipation with punch. The situational training of defend the attack and counter-attack, two karatekas stay at the base fight, during the exercise is combined for a karateka attack in the direction of the trunk and the other karateka needs to defend the attack and after practices the counter-attack. The combined attack training, two karatekas stay at the base fight, during the exercise is combined for a karateka perform the attack in the direction of the trunk and the other karateka needs anticipate the attack with an offensive technique or defend the attack and after practices the counter-attack. The competitive training the karate athlete needs to practice the fight with situations same or similar of the competition. An important content that the karate coach should be prescribe in the situational training and in the competitive training are the practices of the motor learning - blocked practice, the random practice and mixed practice. In conclusion, the specific training based on the contents of the physical education causes an improvement in the fight and is important for the training because the session has a scientific basis.

Key Words

Fight – Karate – Sport – Training

Resumo

O objetivo do estudo foi explicar o treino específico para o karateca melhorar a luta de competição. O treino situacional o técnico de karatê precisa prescrever as ações que ocorrem na luta de competição. O treino situacional com exercício de antecipação, dois karatecas ficam na base de luta, um karateca pratica o ataque com chute ou soco e o outro karateca faz a antecipação com soco. O treino situacional de defende o ataque e contra-ataca, dois karatecas ficam na base de luta, durante o exercício é combinado para um karateca atacar na direção do tronco e o outro karateca precisa defender o ataque e depois praticar o contra-ataque. O treino de ataque combinado, dois karatecas ficam na base de luta, durante o exercício é combinado para um karateca realizar o ataque na direção do tronco e o outro karateca precisa antecipar o ataque com uma técnica ofensiva ou defender o ataque e depois praticar o contra-ataque. O treino competitivo o atleta de karatê precisa praticar a luta com situações idênticas ou semelhantes da competição. Um importante conteúdo que o técnico de karatê deve prescrever no treino situacional e no treino competitivo são as práticas da aprendizagem motora – prática em bloco, prática randômica e prática mista. Em conclusão, o treino específico baseado nos conteúdos da educação física causa uma melhora na luta e é importante para o treino porque a sessão tem um embasamento científico.

Palavras-Chaves

Luta – Karatê – Esporte – Treino

Introduction

The fight (*kumite*) of the *shotokan* karate occurs in a zone 8x8 meters and has a safety zone of 2 meters around of the fight zone¹. The championship of the JKA (Japan Karate Association) and of the ITKF (International Traditional Karate Federation) has five referees, a central referee and four assistant referees². The central referee accompanies the combat in fight zone and determines the points (*waza-ari* or *ippon*) during the *kumite*³. The assistant referee sits in a chair with a red flag and other with the safety zone, in each corner. The assistant referee helps the central referee to determine the point or not or scoring a violation, raises the red flag to annotate the actions during the fight of the karateka with red belt or does the same with the white flag for the karateka of white belt.

The time of fight of the *shotokan* karate is of 1 minute and 30 seconds to 2 minutes. The karate fight has short duration, 80% of the karate fights ending in less than 50 hundredths and 20% of the karate fight ending between 51 hundredths to 1 second and 30 hundredths⁴. During the combat the karateka practices the attack techniques in a few seconds with high velocity⁵. The offensive techniques (punch and/or kick) during the *kumite* are with light contact on the trunk of the karateka⁶. The literature of the shotokan karate detected that in the competition fight the points are with punches and kicks (*ippon* or *waza-ari*)⁷. Then, the prescription of the specific training is important for the karateka because improve the *shiai kumite* (competition fight).

Which attack techniques the karate coach needs to prescribe for the karateka? The *kata* (imaginary fight) improves the *shiai kumite*? The karateka practices more points with punch or kick? The recent studies of the *shotokan* karate have no answers to these questions⁸.

The objective of the study was to explain the specific training to the karateka improve the competition fight (in Japanese is *shiai kumite*).

¹ N. Marques Junior, Fight zone with points of the shotokan karate female competition. *Rev Bras Prescr Físio Exerc* 8:44(2014):137-48.

² N. Marques Junior, Visão do árbitro do karatê shotokan durante a luta: uma revisão baseada na matemática. *Lecturas: Educ Fís Dep* 18:184(2013):1-11.

³ M. Nakayama, O melhor do karatê – kumite 1. vol. 2, 12ª ed. (São Paulo: Cultrix, 2012), 16-26, 144-5.

⁴ L. Bessa, Tempo de reação simples e tempo de movimento no karatê (Graduação, Faculdade do Desport, Universidade do Porto, 2009), 98.

⁵ N. Marques Junior, Velocity of the offensive techniques of the karate for the mixed martial arts fighter: a systematic review. *Rev Observatorio Dep* 1:4(2015):29-62.

⁶ N. Marques Junior e J. Silva Filho, Treino de força para o karateka do estilo shotokan especialista no kumite. *Rev Bras Prescr Físio Exerc* 7:41(2013):506-33.

⁷ N. Marques Junior, Scientific evidences about the fight of the shotokan karate of competition. *Rev Bras Prescr Físio Exerc* 8:47(2014):400-17.

⁸ H. Chaabéne; E. Franchini; S. Sterkowicz; M. Tabben; Y. Hachana and K. Chamari, Physiological responses to karate specific activities. *Sci Sports* 30:4(2015):179-87 and H. Chaabéne. Karate kumite: how to optimize performance (USA: OMICS Group, 2015), 3-12.

Specific training for the fight

Nakayama⁹ informed that the improvement of the *kumite* is related with the evolution of the kata. The basic katas of the *shotokan* karate (Heian, 1st to 5th and Tekki, 1st to 3rd) have techniques of defense and of attack with the karateka practicing the actions in various bases – *zenkutsu dachi*, *kokutsu dachi* and *kiba dachi*. Quantifying the techniques (attack and defense) of the basic katas in Nakayama¹⁰ is possible observe actions used and not used in *shiai kumite* (competition fight). The table 1 and 2 presents the quantification of the basic katas – *heian shodan* (1st kata), *heian nidan* (2nd kata), *heian sandan* (3rd kata), *heian yodan* (4th kata), *heian ghodan* (5th kata), *tekki shodan* (tekki 1st), *tekki nidan* (tekki 2nd) and *tekki sandan* (tekki 3rd).

Defense	1 st kata	2 nd kata	3 rd kata	4 th kata	5 th kata	Tekki 1 st	Tekki 2 nd	Tekki 3 rd
Gedan barai (downward block) in Zenkutsu dachi (front stance)	6	2						
Gedan barai in Kiba dachi (horse stance)						2		
Shuto uke (knife hand block) tchudan in Kokutsu dachi (back stance)	4	7		2				
Jodan age uke (rising block) in Zenkutsu dachi	3	2						
Jodan yoko uke in Kokutsu dachi		2						
Sho (palm of the hand) jodan yoko uke in Kokutsu dachi				2				
Sho osae uke tchudan in Zenkutsu dachi		1	1		1			
Sho kata nagashi uke in Zenkutsu dachi					1			
Sho jodan uke and Sho gedan barai uke in Zenkutsu dachi				1				
Sho sokumen tchudan in Kiba dachi							2	
Tekubi nagashi uke tchudan in Kokutsu dachi		2						
Uchi uke (inward block) tchudan in Zenkutsu dachi		2						
Uchi uke tchudan in Kokutsu dachi			2		2			
Uchi uke tchudan in Kiba dachi							2	1
Uchi uke tchudan and Ashi uke in Kiba dachi						2		
Morote uke tchudan in Zenkutsu dachi		1			1			
Morote uke tchudan in Kokutsu dachi			1	4	1			
Morote uke tchudan in Kosa dachi (cross leg stance)					1			
Uchi uke tchudan and Gedan uke in Heisoku dachi (fett together stance)			4					
Uchi uke tchudan and Gedan uke in Kiba dachi								4
Jodan nagashi uke and Gedan uke in Kiba dachi						2	2	
Jodan nagashi uke in Kiba dachi								2
Empi uke (elbow block)tchudan in Kiba dachi			3	4				
Kake uke tchudan in Kiba dachi			1		1	2		
Gedan juji uke (downward X block) in Zenkutsu dachi				1	1			
Gedan juji uke in Kosa dachi					1			

Table 1 Basic kata (defense)

⁹ M. Nakayama, O melhor do karatê – kumite 1. vol. 2, 12^a ed. (São Paulo: Cultrix, 2012), 16-26, 144-5.

¹⁰ M. Nakayama, O melhor do karatê – heian e tekki. vol. 5, 18^a ed. (São Paulo: Cultrix; 2012b), 9-141.

Specific training for the shotokan karate based on the competition fight pág. 150

Defense	1 st kata	2 nd kata	3 rd kata	4 th kata	5 th kata	Tekki 1 st	Tekki 2 nd	Tekki 3 rd
Sho jodan juji uke in in Zenkutsu dachi					1			
Kakiwake uke tchudan in Kokutsu dachi				2				
Mizu nagare in Heisoku dachi					2			
Sokumen gedan barai in Zenkutsu dachi					1			
Sokumen uke tchudan in Kiba dachi and Ashi uke in Kiba dachi						4		
Sokumen jodan uchi uke and Sokumen gedan uke in Kokutsu dachi					1			
Sokumen uke tchudan in Kiba dachi							4	1
Sokumen gedan furisute								2
Tai sabaki tobi (dodge with jump)					1			
Hiji uke in Kiba dachi							1	
Hiji uke in Heisoku dachi							1	
Gedan uke in Kosa dachi							2	
Gedan uke in Kiba dachi							2	
Gedan oshi uke in Kiba dachi								2
Zenwan barai tchudan in Kiba dachi								2
Total of Defense	13	19	12	16	16	12	16	14

Continuation of the Table 1
Basic kata (defense)

Attack	1 st kata	2 nd kata	3 rd kata	4 th kata	5 th kata	Tekki 1 st	Tekki 2 nd	Tekki 3 rd
Oi zuki tchudan (lunge punch) in Zenkutsu dachi	7		2					
Kentsui tate mawashi uchi tchudan (hammer) in Zenkutsu dachi	1							
Kentsui uchi komi tchudan (punch) in Kokutsu dachi		2						
Sokumen zuki tchudan (punch) in Kokutsu dachi		2						
Uraken yoko mawashi uchi (back of the hand) jodan and Yoko geri keage (kick)		1		2				
Nukite tchudan (fingertips) in Zenkutsu dachi		1	1					
Mae geri keage (kick) followed by Gyaku zuki tchudan (reverse punch) in Zenkutsu dachi		2						
Mae geri keage (kick) followed by Uraken tate mawashi uchi tchudan in Zenkutsu dachi				1				
Mae geri keage followed by Oi zuki tchudan and after Gyaku zuki tchudan in Zenkutsu dachi				2				
Kentsui yoko mawashi uchi tchudan (hammer) in Kiba dachi			1					
Uraken sokumen tate mawashi uchi (back of the hand) jodan in Kiba dachi			3					
Zuki age (punch) jodan in Kiba dachi			2					
Empi (poke) ushiro ate in Kiba dachi			2				2	
Empi uchi tchudan in Zenkutsu dachi				2	1			
Empi tchudan in Kiba dachi						2	2	
Fumikomi (tread) in Kiba dachi			3		1	6	6	2
Shuto jodan yoko mawashi uchi in Zenkutsu dachi				1				
Shuto gedan uchi komi in Zenkutsu dachi					1			
Hiza geri jodan (knee him)				1				

Gyaku zuki tchudan in Kokutsu dachi					2			
Kizami zuki (thrust punch) tchudan and Oi zuki tchudan in Zenkutsu dachi					1			
Mikazuki geri (kick)					1			
Morote koho zuki age (punch) in Renoji dachi (standing position)					1			
Kagi zuki (punch) tchudan in Kiba dachi						2	2	
Attack	1st kata	2nd kata	3rd kata	4th kata	5th kata	Tekki 1st	Tekki 2nd	Tekki 3rd
Ura zuki (punch) jodan in Kiba dachi						2	2	2
Sokumen zuki and Kagi zuki tchudan in Kiba dachi						2		
Choku zuki in Kiba dachi								2
Total of Attack	8	10	14	9	8	14	14	6
Quantity of Kiai	2	2	2	2	2	2	2	2
Time of the Kata (seconds, s)	~ 40 s	~ 40 s	~ 40 s	~ 50 s	~ 50 s	~ 50 s	~ 50 s	~ 50 s
Line of Action (embusen)	I	I	T	I	T	straig ht	straig ht	straig ht

Table 2
Basic kata (attack, kiai, time and line of action)

The defenses used in *shiai kumite* (competition fight) are the *gedan barai* and the *soto uke*¹¹. The basic *katas* the karateka practices 110 defenses not used in competition and makes only 8 defenses of *gedan barai*, 6 in the 1st kata and 2 in the 2nd kata. The basic *katas* use two types of offensive actions, attack or defend and counter-attack¹². The karateka during the *shiai kumite* uses the anticipation because the attack is very difficult of defense, then the best defense is the attack¹³. The punches used in *shiai kumite* that causes ippon or *waza-ari* are compounds by *gyaku zuki*, *kizami zuki*, *kizami zuki* followed by *gyaku zuki* and *oi zuki*, the punches are practiced at the base *zenkutsu dachi*¹⁴. The others attacks used in *shiai kumite* that causes point are compounds by *mae geri*, *mawashi geri*, *mae geri* followed by *kizami zuki* or by *oi zuki*, *mawashi geri* followed by *kizami zuki* or by *oi zuki* and *ashi barai* followed by *gyaku zuki* (foot sweep and punch)¹⁵. The basic *kata* the karateka practices 73 attacks not used in competition or causes little point during the *shiai kumite*. The attacks of the basic *katas* that the karateka practices during the *shiai kumite* and which cause points are 10 actions, the attacks are the follows:

¹¹ N. Marques Junior, Scientific evidences about the fight of the shotokan karate of competition. Rev Bras Prescr Fisio Exerc 8:47(2014):400-17.

¹² M. Nakayama, O melhor do karatê – heian e tekki. vol. 5, 18ª ed. (São Paulo: Cultrix; 2012b), 9-141.

¹³ N. Marques Junior, Porque o soco causa mais pontos do que o chute durante a luta de karatê? Conteúdo para prescrever o treino do karatê shotokan. Rev Bras Prescr Fisio Exerc 7:40(2013):376-87.

¹⁴ N. Marques Junior, Campeonato Mundial de Kumite do Karatê Shotokan: pontos dos golpes, ações ofensivas e zona dos pontos do brasileiro Luiz Tasuke Watanabe, Lecturas: Educ Fís Dep 17:178(2013):1-7 and H. Sertic; I. Segedi and T. Vidranski, Situational efficiency arm and leg techniques in a karate fight of top-level female karate competitors. J Martial Arts Anthropol 12:2(2012):44-9.

¹⁵ N. Marques Junior, Karatê shotokan: pontos dos golpes durante o kumite de competição masculino. Ulbra Mov 2:1(2011):1-15 and N. Marques Junior. Shotokan karate: score of the techniques during the female kumite of competition. Lecturas: Educ Fís Dep 17:174(2012):1-8.

oi zuki tchudan in *zenkutsu dachi* (7 in the 1st kata, 2 in the 3rd kata), *kizami zuki tchudan* and *oi zuki tchudan* in *zenkutsu dachi* (1 in the 5th kata).

Stevenson¹⁶ informed that the *kata* has actions of attack and defense that is difficult of the karateka use in a real combat. Second Donohue¹⁷, the *kata* are actions of the karate based on the cultural aspect of the Japanese. Filingeri et al.¹⁸ explicated that the karate competition has karatekas experts in the *kata*, in the *kumite* and in both. The karateka that is expert in *shiai kumite* (competition fight) has to train the fight and in situation of fight¹⁹. The emphasis of the training needs to be the competitive training (fight) and situational training (similar the fight)²⁰. The *kata* and the technical training (*kihon*) are important for the karateka improve sporting technique and the respiration during the movements of the karate (attacks and defenses).

How the karateka should train the *shiai kumite*?

The karate coach needs to prescribe the attack, the defense and the counter-attack and the actions used during the *shiai kumite*. The action that occurs in the *shiai kumite* is with the anticipation of attack²¹. The best karatekas have an anticipation of attack better than lower karatekas²². The attack technical of the *shotokan* karate with more points during the anticipation are the *gyaku zuki* (reverse punch) and the *kizami zuki* (thrust punch)²³. The exercise of anticipation two karatekas stay at the base fight, a karateka practices the attack with *mae geri* (front kick) or *oi zuki* (lunge punch) and the other karateka does the anticipation with *gyaku zuki* or *kizami zuki* at maximum velocity²⁴. During the exercise is combined for the karateka attack and the other karateka should anticipate the attack. The exercise of anticipation needs to has 3 to 10 repetitions and with 2 to 5 sets, the pause for the anaerobic exercise alactic has the relation of 1:2 or 1:3²⁵. Generally the anticipation is in anaerobic metabolism alactic, with stimulus duration between 1 to 15 seconds. But during the *shiai kumite*, the stimulus can be anaerobic lactic – duration between 16

¹⁶ J. Stevenson, Três mestres do budo. 10^a ed. (São Paulo: Cultrix, 2013), 87.

¹⁷ J. Donohue, Kaho: significado cultural y método educativo en el entrenamiento de la kata. RAMA 1:4(2006):8-19.

¹⁸ D. Filingeri; A. Bianco; D. Zangla; A. Paoli and A. Palma, Is karate effective improving postural control? Arch Budo 8:4(2012):191-4.

¹⁹ W. Starosta and T. Pawlowa. Level of selected movement coordination abilities in different trainings periods in athletes polish national team of traditional karate. J Combat Sport Martial Art 2:2(2011):95-101.

²⁰ L. Lourenço, Mourinho: a descoberta guiada (São Paulo: Almedina, 2010), 165-84.

²¹ N. Koropanovski and S. Jovanovics, Model characteristics of combat elite male karate competitors. Serbian J Sports Sci 1:3(2007):97-115.

²² E. Franchini e F. del Vecchio, Estudo em modalidades esportivas de combate: estado da arte. Rev Bras Educ Fís Esp 25:esp(2011):67-81.

²³ N. Marques Junior, Porque o soco causa mais pontos do que o chute durante a luta de karatê? Conteúdo para prescrever o treino do karatê shotokan. Rev Bras Prescr Fisio Exerc 7:40(2013):376-87.

²⁴ K. Witte; K. Itte; P. Emmermacher; N. Bandow and S. Masik, Usage of virtual reality technology to study reactions in karate-kumite. Int J Sports Sci Eng 6:1(2012):17-24.

²⁵ N. Marques Junior, Effort during the shotokan karate kumite in 13th Brazilian championship JKA, 2012. Lecturas: Educ Fís Dep 17:172(2012):1-10.

seconds to 1 minute and 59 seconds²⁶, then the pause has a relation of 1:2 or 1:1²⁷. The figure 1 to 3 illustrates the situational training of anticipation.

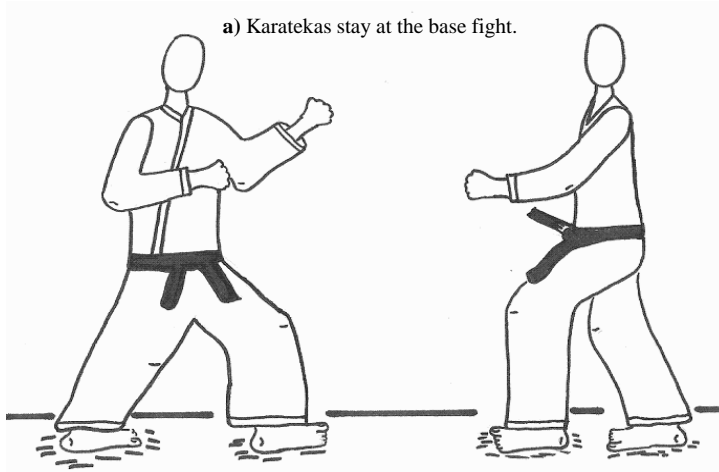
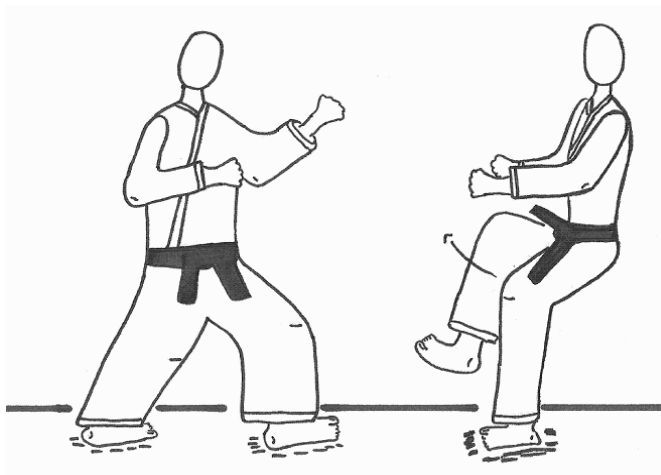


Figure 1
The karate fighters during the situational training of anticipation



b) Opponent starts the front kick (*mae geri*).

Figure 2
The opponent practicing the kick

²⁶ H. Roschel; M. Batista; R. Monteiro; R. Bertuzzi; R. Barroso; I. Loturco; C. Ugrinowitsch; V. Tricoli and E. Franchini, Association between neuromuscular tests and kumite performance on the Brazilian Karate National Team. J Sports Sci Med 8:c3 (2009):20-4.

²⁷ M. Glaister, Multiple sprint work: physiological response, mechanisms of fatigue and the influence of aerobic fitness. Sports Med 35:9(2005):757-77.

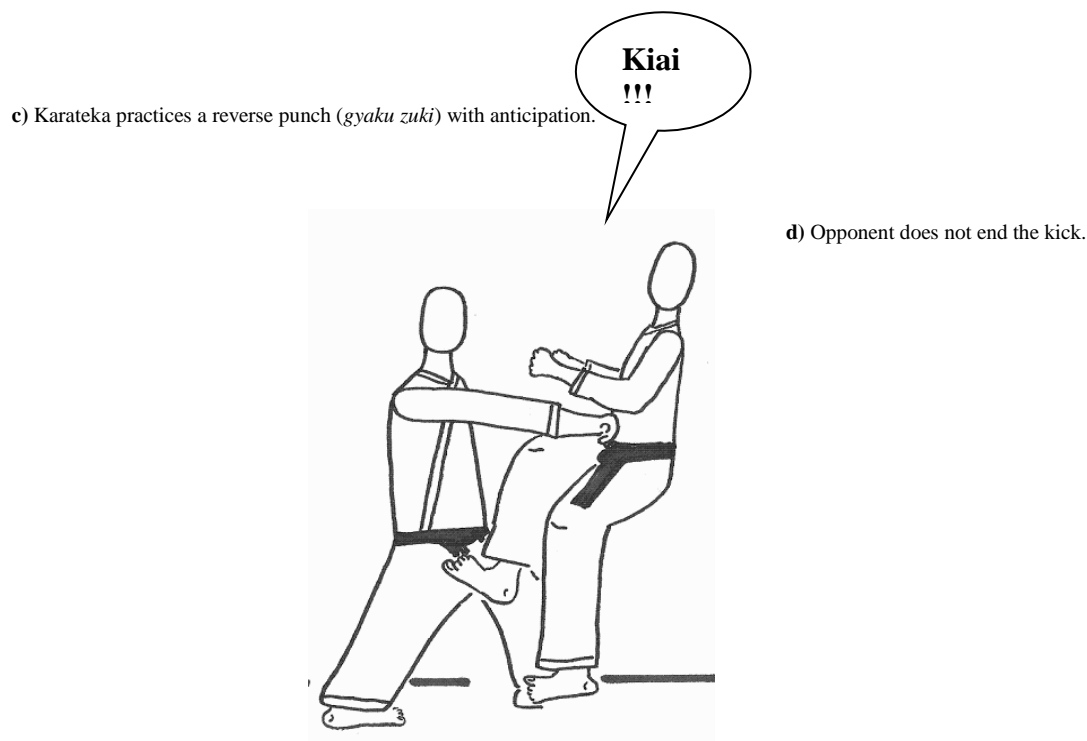


Figure 3
The karateka practiced the anticipation with punch

Other situational training that the karate coach needs to prescribe for the karateka and that occurs during the *shiai kumite* (competition fight) is defend the attack and counter-attack²⁸. The situational training of defend the attack and counter-attack (in Japanese is called of *kihon ippon kumite*) the two karatekas stay at the base fight, during the exercise is combined for the karateka attack punch or kick or kick and punch in the direction of the trunk (*tchudan* attack) and the other karateka needs to defend the attack and after practices the counter-attack²⁹. The defends more used by karatekas are the *gedan barai uke* (downward block) and the *soto uke* (forearm block)³⁰. The attacks techniques that the karateka practices more defenses are the kicks, *mae geri* (front kick) and *mawashi geri* (roundhouse kick)³¹. The counter-attack more used is with *gyaku zuki* (reverse punch) because is the punch faster and in a short distance the punch is more effective to perform the point³².

²⁸ M. Tabben; J. Coquart; H. Chaabéne; E. Franchini; N. Ghoual and C. Tourny, Time-motion, tactical and technical analysis on top-level karatekas according to gender, match outcome and weight categories. *J Sports Sci* 33:8(2015):841-9.

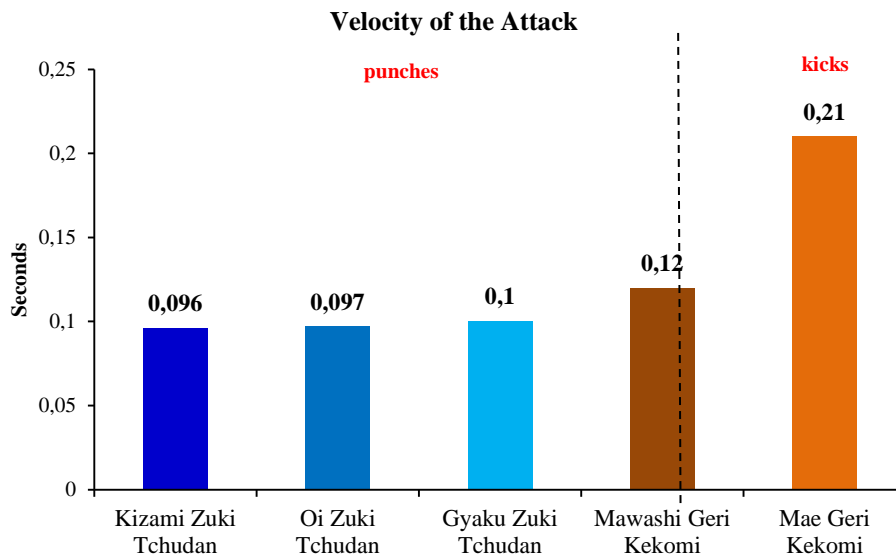
²⁹ M. Silva e J. Juvêncio, Considerações técnicas sobre a luta (kumite) em karatê-esporte. *Rev Min Educ Fís* 4:1(1996):37-44.

³⁰ N. Marques Junior, Pontos dos golpes durante o kumitê de competição do karatê shotokan masculino. *Lecturas: Educ Fís Dep* 17:169(2012):1-12.

³¹ N. Marques Junior, Scientific evidences about the fight of the shotokan karate of competition. *Rev Bras Prescr Fisio Exerc* 8:47(2014):400-17.

³² N. Koropanovski; M. Dopjaj and S. Jovanovic, Characteristics of pointing actions of top male competitors in karate at world and European level. *Braz J Biomotr* 2:4(2008):241-51.

Marques Junior³³ determined the velocity in seconds of the attack techniques that causes more points during the *shiai kumite*, the time of the attacks were the following: 0,096 seconds (s) of the *kizami zuki tchudan* (thrust punch in trunk), 0,097 s of the *oi zuki* (lunge punch in trunk), 0,10 s of the *gyaku zuki tchudan* (reverse punch in trunk), 0,12 s of the *mawashi geri kekomi* (roundhouse kick in trunk) and 0,21 s of the *mae geri kekomi* (front kick in trunk). Know the velocity in seconds of the punch and of the kick is important for the karateka determines the best attack technique during the counter-attack, during the anticipation and during the attack. The graph 1 illustrates the velocity of the attack in seconds³⁴.



Graph 1
Velocity of the attack techniques with time in seconds

The punches of the *shotokan* karate were faster than the kicks. This is one of the motives of the karate fighter use more the punch³⁵.

The last situational training indicated in this review is the combined attack. The situational training of the combined attack is important for the karateka improve the sequence of kick and of punch during the attack. This type of training is important for the karateka improve the exact moment of practices an attack (called in Japanese of time fight)³⁶. Doder and Doder³⁷ informed that karatekas of 1,80 meters or more, should use more kicks because difficult of the opponent of small stature to do an attack.

³³ N. Marques Junior, Velocity of the offensive techniques of the karate for the mixed martial arts fighter: a systematic review. *Rev Observatorio Dep* 1:4(2015):29-62.

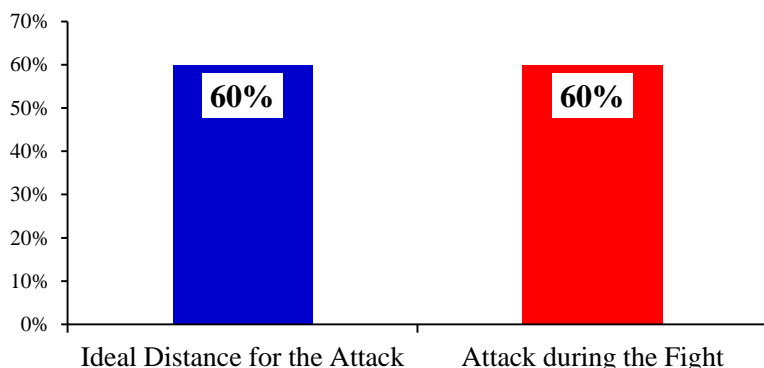
³⁴ N. Marques Junior, Velocity of the offensive techniques...

³⁵ H. Chaabéne; B. Mkaouer; E. Franchini ; N. Souissi ; M. Selmi ; Y. Nagra and K. Chamari, Physiological responses and performance analysis difference between official and simulated karate combat conditions. *Asian J Sports Med* 5:1(2014):21-9.

³⁶ A. Vences de Brito; C. Silva; L. Cid; D. Ferreira y A. Marques, Atención y tiempo de reacción en practicantes de kárate shotokan. *RAMA* 6:1(2011):141-56.

Combined attack the two karatekas stay at the base fight, during the exercise is combined for the karateka perform the attack in the direction of the trunk and other karateka needs anticipate the attack with an offensive technique or defend the attack and after practices the counter-attack³⁸. The training of combined attack the karatekas need to practice in high velocity to be equal to the combat. El-Kader³⁹ evidenced that situational training causes an improvement of approximately 60% of the ideal distance to perform the attack and also improve in the execution of the attack in 60%. This study occurred in a session of 20 minutes. The graph 2 illustrates the results of the study of El-Kader⁴⁰.

Improves of the Fight



Graph 2

Situational training causes an improvement of the *shiai kumite*

The competitive training the karate athlete needs to practice the fight with situations same or similar of the competition⁴¹. Competitions of minor importance the karate coach can use the championship how competitive training⁴². The competitive training has a problem, is difficult for the coach determines the training load because the actions of the karateka are of difficult control⁴³.

An important content that the karate coach should be prescribe in the situational training and in the competitive training are the practices of the motor learning⁴⁴. The

³⁷ D. Doder and R. Doder, Effect of anthropological characteristics on the efficiency of execution of forward kick. Proc Nat Sci Matica Srpska Novi Sad -:110(2006):45-54.

³⁸ M. Nakayama, O melhor do karatê – kumite 1. vol. 2, 12ª ed. (São Paulo: Cultrix, 2012), 16-26, 144-5.

³⁹ A. El-Kader. Efficacy of static and dynamic distance perception on kumite performance in karate. World J Sport Sci 3:s (2010):205-9.

⁴⁰ A. El-Kader, Efficacy of static and dynamic distance...

⁴¹ L. Matveev, Fundamentos do treino desportivo. 2ª ed. (Lisboa: Horizonte, 1991), 50-2.

⁴² A. Zakharov, Ciência do treinamento desportivo. (Rio de Janeiro: GPS, 1992), 50-2, 251.

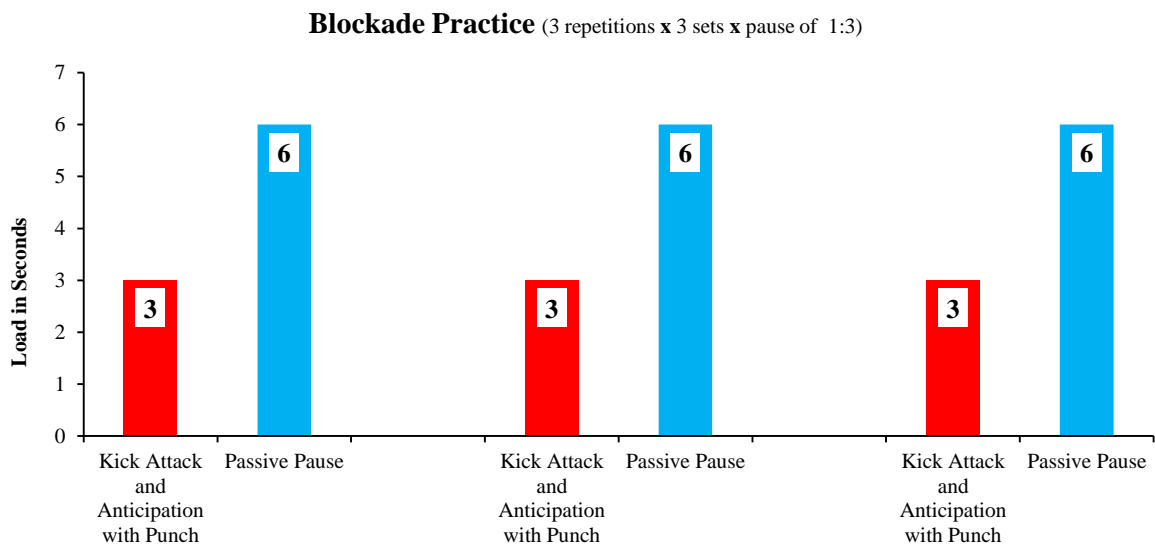
⁴³ A. Gomes, Treinamento desportivo: princípios, meios e métodos. (Londrina: Treinamento Desportivo, 1999), 50-1.

⁴⁴ N. Marques Junior e J. Silva Filho, Treino de força para o karateca do estilo shotokan especialista no kumite. Rev Bras Prescr Fisio Exerc 7:41(2013):506-33.

practices of the motor learning recommended for the situational training and for the competitive training are the blocked practice, the random practice and mixed practice (composed by: blocked practice and random practice) ⁴⁵.

Blocked practice prescribes repetition drill sequences with low contextual interference, enabling rapid acquisition of the session content⁴⁶. Blocked practice has low contextual interference in karateka because the exercise are with a same sequence and result in memory of the athlete little efforts for practices the training.

For example, blocked practice the karatekas practice situational training of anticipation by 3 repetitions and with 3 sets. At the end of each repetition occurs a pause of 1:3. The pause of 1:3 corresponds an anaerobic training alactic, 1 is the effort of the attack and of the anticipation – 2 seconds, 3 is the pause, for the karate coach know the time of the pause just multiply by 3 the time of the effort – 2 effort x 3 = 6 seconds of passive pause⁴⁷. The graph 3 illustrates the structure of the session with the blockade practice during the situational training of anticipation.



Graph 3
Situational training of anticipation, during the exercise the karatekas training with the blockade practice

Random practice occurs during the situational training or in competitive training for the karateka retains the content of the training⁴⁸. During the random practice, activity of the karate training is without an order of the task with the objective of high contextual

⁴⁵ M. Williams and N. Hodges, Practice, instruction and skill acquisition in soccer: challenging. *J Sports Sci* 23:6(2005):637-50.

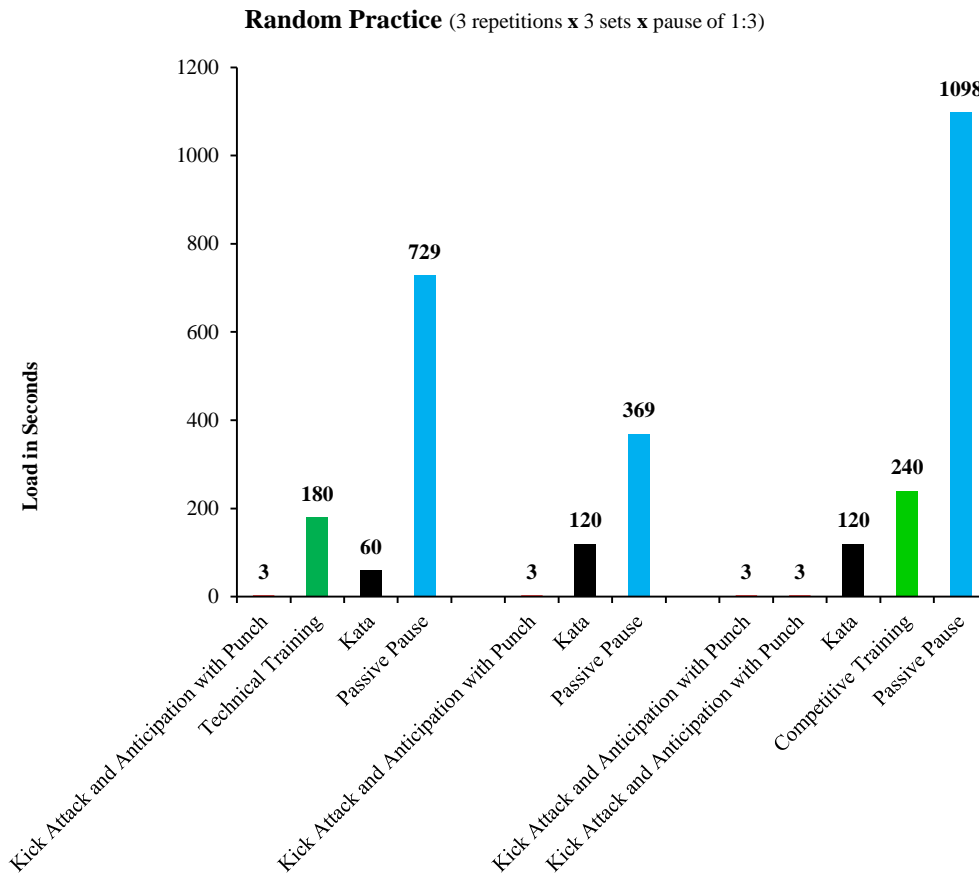
⁴⁶ N. Marques Junior, Coaching peripheral vision training for soccer athletes. *Phys Educ* 67:2(2010):74-89.

⁴⁷ W. McArddle, F. Katch e V. Katch, *Fisiologia do exercício: nutrição, energia e desempenho humano*. 7ª ed. (Rio de Janeiro: Guanabara, 2011), 496-7.

⁴⁸ M. Guadagnoli and T. Lee, Challenge point: a framework for conceptualizing the effects of various practice conditions in motor learning. *J Mot Behav* 36:2(2004):212-24.

interference in memory because the memory of the karateka needs of reconstruct an action plan for practices the training⁴⁹.

For example, random practice the karatekas does situational training of anticipation by 3 repetitions and with 3 sets. At the end of each repetition occurs a pause of 1:3. The random practice the karateka does situational training of anticipation and others activities – technical training and *kata*, the memory has a work more intensity for the karateka remembers the actions during situational training of anticipation. The objective of the others activities (technical training and *kata*) are of difficult the memory of the karateka. How the memory has a work more intensity, random practice has effect significant during the retention of the karate training⁵⁰. The graph 4 illustrates the structure of the session with the random practice during the situational training of anticipation.



Graph 4
Situational training of anticipation, during the exercise the karatekas training with the random practice

⁴⁹ G. Tani, *Comportamento motor: aprendizagem e desenvolvimento* (Rio de Janeiro: Guanabara, 2005), 208-34.

⁵⁰ N. Marques Junior e J. Silva Filho, *Treino de força para o karateca do estilo shotokan especialista no kumite*. *Rev Bras Prescr Fisio Exerc* 7:41(2013):506-33.

Mixed practice (composed by: blocked practice and random practice) Brady⁵¹ determines in meta-analysis that this practice had good retention during the training. Mixed practice is good practice of the motor learning for the karate training because has two types of practices during a session, the blocked practice and random practice.

Training	Type of Training	Type of Practice	Repetitions	Sets	Energy Metabolism Predominant	Velocity of the Training	Pause
Situational I	Anticipation	Blocked, Random and Mixed	3 to 10	2 to 5	Anaerobic Alactic or Anaerobic Lactic	high	1:2 or 1:3 or 1:2 or 1:1
Situational I	Defend the Attack and Counter-Attack (kihon ippon kumite)	Blocked, Random and Mixed	3 to 10	2 to 5	Anaerobic Alactic or Anaerobic Lactic	high	1:2 or 1:3 or 1:2 or 1:1
Situational I	Combined Attack	Blocked, Random and Mixed	3 to 10	2 to 5	Anaerobic Alactic or Anaerobic Lactic	high	1:2 or 1:3 or 1:2 or 1:1
Competitive	Fight	Blocked, Random and Mixed	-	-	Anaerobic Alactic or Anaerobic Lactic or Aerobic	low, medium or high	Depend of the referee

Table 3
Training for the *shiai kumite*

Conclusions

The specific training of the *shotokan* karate based on the competitive fight is composed by the situational training and by the competitive training. The situational training has three types of exercise – anticipation, combined attack, defend the attack and counter-attack. The situational training is important because prepares the karateka for fight. However, the situational training and the competitive training is more effective to improve the *shiai kumite* (competitive fight) when the karate coach prescribes the session with the practices of the motor learning.

In conclusion, the specific training based on the contents of the physical education causes an improvement in the fight and is important for the training because the session has a scientific basis.

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